

SEQUENCE LISTING

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C
(1) GENERAL INFORMATION:

(i) APPLICANT: JOHNSON, L.

(ii) TITLE OF INVENTION: Human Murine Chimeric Antibodies Against Respiratory Syncytical Virus

(iii) NUMBER OF SEQUENCES: 49

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: CARELLA, BYRNE, BAIN, GILFILLAN, CECCHI, STEWART & OLSTEIN

(B) STREET: 6 BECKER FARM ROAD

(C) CITY: ROSELAND

(D) STATE: NEW JERSEY

(E) COUNTRY: USA

(F) ZIP: 07068

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: 3.5 INCH DISKETTE

(B) COMPUTER: IBM PS/2

(C) OPERATING SYSTEM: MS-DOS

(D) SOFTWARE: Word Perfect 5.1

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 08/290,592

(B) FILING DATE: August 15, 1994

(C) CLASSIFICATION: 424

(vii) PRIOR APPLICATION DATA

(A) APPLICATION NUMBER: 07/813,372

(B) FILING DATE: December 23, 1991

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Olstein, Elliot M.

(B) REGISTRATION NUMBER: 24,025

(C) REFERENCE/DOCKET NUMBER: 469201-257

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 201-994-1700

(B) TELEFAX: 201-994-1744

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 27 BASE PAIRS

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
AGCGGATCCA GGGGCCAGTG GATAGAC

27

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 17 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

TGGATGGTGG GAAGATG

17

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 15 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GGCCAGTGGA TAGAC

15

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 16 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

TACAGTTGGT GCAGCA

16

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 24 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GATGGATCCA GTTGGTGCAG CATC

24

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 30 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CACGTCGACA TTCAGCTGAC CCAGTCTCCA

30

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 30 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

CGGAATTCAAG GTNNANCTGC AGNAGTCWGG

30

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 28 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

CCCAAGCTTG GTCCCCCCTC CGAACGTG

28

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 39 NUCLEOTIDES

(B) TYPE: NUCLEIC ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GGCGTCGACT CACCATGGAC ATGAGGGTCC YCGCTCAGC

39

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 57 NUCLEOTIDES	
(B) TYPE: NUCLEIC ACID	
(C) STRANDEDNESS: SINGLE	
(D) TOPOLOGY: LINEAR	
(ii) MOLECULE TYPE: Oligonucleotide	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:	
GTCAACCATCA CTTGCAAGTG CCAGCTGAGT GTAGGTTACA TGCACCTGGTA CCAGCAG	57
(2) INFORMATION FOR SEQ ID NO:11:	
(i) SEQUENCE CHARACTERISTICS	
(A) LENGTH: 54 NUCLEOTIDES	
(B) TYPE: NUCLEIC ACID	
(C) STRANDEDNESS: SINGLE	
(D) TOPOLOGY: LINEAR	
(ii) MOLECULE TYPE: Oligonucleotide	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:	
GCAACTTATT ACTGCTTCA GGGGAGTGGG TACCCATTCA CGTCGGAGG GGGG	54
(2) INFORMATION FOR SEQ ID NO:12:	
(i) SEQUENCE CHARACTERISTICS	
(A) LENGTH: 32 NUCLEOTIDES	
(B) TYPE: NUCLEIC ACID	
(C) STRANDEDNESS: SINGLE	
(D) TOPOLOGY: LINEAR	
(ii) MOLECULE TYPE: Oligonucleotide	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:	
GTGACCAACA TGGACCTG TGATACTGCC AC	32
(2) INFORMATION FOR SEQ ID NO:13:	
(i) SEQUENCE CHARACTERISTICS	
(A) LENGTH: 29 NUCLEOTIDES	
(B) TYPE: NUCLEIC ACID	
(C) STRANDEDNESS: SINGLE	
(D) TOPOLOGY: LINEAR	
(ii) MOLECULE TYPE: Oligonucleotide	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:	
CCATGTTGGT CACTTAAGG ACCACCTGG	29
(2) INFORMATION FOR SEQ ID NO:14:	
(i) SEQUENCE CHARACTERISTICS	
(A) LENGTH: 37 NUCLEOTIDES	
(B) TYPE: NUCLEIC ACID	

(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:
CCAGTTTACT AGTGTCA TAGCAGGAGCT TAGGGC

37

(2) INFORMATION FOR SEQ ID NO:15:
(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 37 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:
TGACACTAGT AAACTGGCTT CTGGGGTCCC ATCAAGG

37

(2) INFORMATION FOR SEQ ID NO:16:
(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 97 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly
5 10 15
Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Asn
20 25 30
Ser Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
35 40 45
Glu Trp Met Gly Ile Ile Asn Pro Ser Gly Gly Ser Thr Ser Tyr
50 55 60
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser
65 70 75
Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp
80 85 90
Thr Ala Val Tyr Tyr Cys Ala

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 117 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly

5

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Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys

20

25

30

Asp Tyr Tyr Ile Tyr Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

35

40

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Glu Trp Ile Gly Trp Ile Asp Pro Glu Asn Gly Asn Thr Val Phe

50

55

60

Asp Pro Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser

65

70

75

Thr Ser Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp

80

85

90

Thr Ala Val Tyr Tyr Cys Ala Tyr Tyr Gly Thr Ser Ser Phe Asp

95

100

105

Phe Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser

110

115

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 117 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly

5

10

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Ala Leu Val Lys Leu Ser Cys Lys Ala Ser Gly Phe Asn Ile Lys
20 25 30

Asp Tyr Tyr Ile Tyr Trp Val Lys Gln Arg Pro Glu Gln Gly Leu
35 40 45

Glu Trp Ile Gly Trp Ile Asp Pro Glu Asn Gly Asn Thr Val Phe
50 55 60

Asp Pro Lys Phe Gln Gly Lys Ala Ser Ile Thr Ser Asp Thr Ser
65 70 75

Ser Asn Thr Ala Tyr Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp
80 85 90

Thr Ala Val Tyr Tyr Cys Ala Tyr Tyr Gly Thr Ser Ser Phe Asp
95 100 105

Phe Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
110 115

(2) INFORMATION FOR SEQ ID NO:19

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 95 AMINO ACIDS
- (B) TYPE: AMINO ACID
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser
20 25 30

Ser Trp Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
35 40 45

Leu Leu Ile Tyr Asp Ala Ser Ser Leu Glu Ser Gly Val Pro Ser
50 55 60

Arg Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile

65

70

75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
80 85 90

Tyr Asn Ser Tyr Ser
95

(2) INFORMATION FOR SEQ ID NO:20

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 107 AMINO ACIDS
- (B) TYPE: AMINO ACID
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn
20 25 30

Arg Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
35 40 45

Leu Leu Ile Tyr Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser
50 55 60

Arg Phe Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile
65 70 75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Leu Gln
80 85 90

Phe His Glu Phe Pro Tyr Thr Phe Gly Gly Thr Lys Leu Glu
95 100 105

Ile Lys

(2) INFORMATION FOR SEQ ID NO:21

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 107 AMINO ACIDS
- (B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR
 (ii) MOLECULE TYPE: PROTEIN
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:
 Asp Ile Lys Met Thr Gln Ser Pro Ser Ser Met Tyr Val Ser Leu
 5 10 15
 Gly Glu Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Ile Asn
 20 25 30
 Arg Tyr Leu Asn Trp Phe Gln Gln Lys Pro Gly Lys Ser Pro Lys
 35 40 45
 Thr Leu Ile His Arg Ala Asn Arg Leu Val Asp Gly Val Pro Ser
 50 55 60
 Arg Phe Ser Gly Ser Gly Gln Glu Tyr Ser Leu Thr Ile
 65 70 75
 Ser Ser Leu Glu Phe Glu Asp Met Gly Ile Tyr Tyr Cys Leu Gln
 80 85 90
 Phe His Glu Phe Pro Tyr Thr Phe Gly Gly Thr Lys Leu Glu
 95 100 105
 Ile Lys

(2) INFORMATION FOR SEQ ID NO:22:
 (i) SEQUENCE CHARACTERISTICS
 (A) LENGTH: 117 NUCLEOTIDES
 (B) TYPE: NUCLEIC ACID
 (C) STRANDEDNESS: SINGLE
 (D) TOPOLOGY: LINEAR
 (ii) MOLECULE TYPE: Oligonucleotide
 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:
 CCATGGACTG GACCTGGAGG GTCTTCTGCT TGCTGGCTGT AGCACCAGGT GCCCACTCCC 60
 AGGTGCAGCT GGTGCAGTCT GGAGCTGAGG TGAAGAAGCC TGGAGCCTCA GTGAAGG 117

(2) INFORMATION FOR SEQ ID NO:23:
 (i) SEQUENCE CHARACTERISTICS
 (A) LENGTH: 120 NUCLEOTIDES
 (B) TYPE: NUCLEIC ACID
 (C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:
CACTTCTTCG GACCTCGGAG TCACTTCAA AGGACGTTCC GTAGACCTAA GTTGTAAATTG
CTGATGATGT AAATGACCCA CGCTGTCCGA GGACCTGTTG CCGAGCTCAC CTACCCAACC 60
120

(2) INFORMATION FOR SEQ ID NO:24:
(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 119 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:
GGGCTCGAGT GGATGGGTTG GATTGACCT GAGAATGGTA ATACTGTGTT TGACCGAAGT
TCCAGGGCAG AGTCACCATG ACCAGGGACA CGTCCACGAG CACAGTCTAC ATGGAGCTG 60
119

(2) INFORMATION FOR SEQ ID NO:25:
(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 137 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:
GGTGCTCGTG TCAGATGTAC CTCGACTCGT CGGACTCTAG ACTCCTGTGC CGGCACATAA
TGACACGCAT GATGCCATGT TCGAGGAAAC TGAAGACCCC GGTTCCGTGG TGAGAGTGTG 60
120
ACTCGAGTAT TCCTAGG 137

(2) INFORMATION FOR SEQ ID NO:26:
(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 106 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:
CCATGGACAT GAGGGTCCCC GCTCAGCTCC TGGGGCTCCT GCTGCTCTGG CTCCCAGGTG
CCAAATGTGA TATCCAGATG ACCCAGTCTC CTTCCACCCCT GTCTGC 60
106

(2) INFORMATION FOR SEQ ID NO:27:
(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 107 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:
TCAGAGGAA GGTGGGACAG ACGTAGACAT CCTCTGTCTC AGTGGTAGTG AACGTTCCGC 60
CAGTCCTGT AATTATCCAT AAATTTGACC ATGGTCGTCT TTGGGCC 107

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 107 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: Oligonucleotide

xi) SEQUENCE DESCRIPTION: SEQ ID NO:28

GAAAGCCCCCT	AAGCTCCTGA	TCTATCGTGC	AAACAGATTG	GTAGATGGGG	TCCCATCAAG	60
GTTCAGCGGGC	AGTGGATCTG	GGACAGAAATT	CACTCTCACC	ATCAGCA		107

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 116 NUCLEOTIDES
- (B) TYPE: NUCLEIC ACID
- (C) STRANDEDNESS: SINGLE
- (D) TOPOLOGY: LINEAR

ii) MOLECULE TYPE: Oligonucleotide

xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

```
GTCTTAAGTG AGAGTGGTAG TCGTCGGACG TCGGACTACT AAAACGTTGA ATAATGACGG 60
ATGTCAAAGT ACTCAAAGGC ATGTGCAAGC CTCCCCCTG GTTCGAACTT TATTTT 116
```

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH: 123 AMINO ACIDS
 - (B) TYPE: AMINO ACID
 - (D) TOPOLOGY: LINEAR
- (ii) MOLECULE TYPE: PROTEIN
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr
5 10 15

Gln Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser

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Ser Ser Gly Met Cys Val Gly Trp Ile Arg Gln Pro Pro Gly Lys
35 40 45

Ala Leu Glu Trp Leu Ala Asp Ile Glu Trp Asp Asp Asp Lys Asp
50 55 60

Tyr Asn Thr Ser Leu Asp Thr Arg Leu Thr Ile Ser Lys Asp Thr
65 70 75

Ser Lys Asn Gln Val Val Leu Thr Val Thr Asn Met Asp Pro Ala
80 85 90

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ile Thr Val Ile Pro Ala
95 100 105

Pro Ala Gly Tyr Met Asp Val Trp Gly Arg Gly Thr Pro Val Thr
110 115 120

Val Ser Ser

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS

- (A) LENGTH: 120 AMINO ACIDS
- (B) TYPE: AMINO ACID
- (D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr
5 10 15

Gln Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser
20 25 30

Thr Ser Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Lys
35 40 45

Ala Leu Glu Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp
50 55 60

Tyr Asn Pro Ser Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr

65

70

75

Ser Lys Asn Gln Val Val Leu Lys Val Thr Asn Met Asp Pro Ala
80 85 90

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ser Met Ile Thr Asn Trp
95 100 105

Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser
110 115 120

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 120 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Gln Val Glu Leu Gln Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser
5 10 15

Gln Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser
20 25 30

Thr Ser Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Glu
35 40 45

Gly Leu Glu Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp
50 55 60

Tyr Asn Pro Ser Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr
65 70 75

Ser Ser Asn Gln Val Phe Leu Lys Ile Thr Gly Val Asp Thr Ala
80 85 90

Asp Thr Ala Thr Tyr Tyr Cys Ala Arg Ser Met Ile Thr Asn Trp
95 100 105

Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser
110 115 120

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 95 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser
20 25 30

Ser Trp Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
35 40 45

Leu Leu Ile Tyr Asp Ala Ser Ser Leu Glu Ser Gly Val Pro Ser
50 55 60

Arg Phe Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile
65 70 75

Ser Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
80 85 90

Tyr Asn Ser Tyr Ser
95

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 106 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val
5 10 15

Gly Asp Arg Val Thr Ile Thr Cys Lys Cys Gln Leu Ser Val Gly
20 25 30

Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu

35

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Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg
50 55 60

Phe Ser Gly Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser
65 70 75

Ser Leu Gln Pro Asp Asp Phe Ala Thr Tyr Tyr Cys Phe Gln Gly
80 85 90

Ser Gly Tyr Pro Phe Thr Phe Gly Gly Thr Lys Leu Glu Ile
95 100 105

Lys

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 106 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Asp Ile Gln Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro
5 10 15

Gly Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Gly
20 25 30

Tyr Met His Trp Tyr Gln Gln Lys Ser Ser Thr Ser Pro Lys Leu
35 40 45

Trp Ile Tyr Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Gly Arg
50 55 60

Phe Ser Gly Ser Gly Ser Gly Asn Ser Tyr Ser Leu Thr Ile Ser
65 70 75

Ser Ile Gln Ala Glu Asp Val Ala Thr Tyr Tyr Cys Phe Gln Gly
80 85 90

Ser Gly Tyr Pro Phe Thr Phe Gly Gly Thr Lys Leu Glu Ile
95 100 105

Lys

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH: 63 NUCLEOTIDES
 - (B) TYPE: NUCLEIC ACID
 - (C) STRANDEDNESS: SINGLE
 - (D) TOPOLOGY: LINEAR
- (ii) MOLECULE TYPE: Oligonucleotide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GCCTGAGCTC ACGGTGACCG TGGTCCCGCC GCCCCAGACA TCGAAGTAGC AGTCGTGAT CAT

63

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH: 79 NUCLEOTIDES
 - (B) TYPE: NUCLEIC ACID
 - (C) STRANDEDNESS: SINGLE
 - (D) TOPOLOGY: LINEAR
- (ii) MOLECULE TYPE: Oligonucleotide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GTTGGTGACT TTAAGGACCA CCTGGTTTTT GGAGGTATCC TTGGAGATTG TGAGCCGGCT

60

CTTCAGCCAT GGATTATAG

79

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH: 89 NUCLEOTIDES
 - (B) TYPE: NUCLEIC ACID
 - (C) STRANDEDNESS: SINGLE
 - (D) TOPOLOGY: LINEAR
- (ii) MOLECULE TYPE: Oligonucleotide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GCGCCTTCCC TGGGGGCTGA CGAATCCAGC CTACACTCAT ACCAGAAGTG CTCAGTGAAA

60

ACCCAGAGAA GGTGGAGGTC AGTGTGAGG

89

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS
 - (A) LENGTH: 70 NUCLEOTIDES
 - (B) TYPE: NUCLEIC ACID
 - (C) STRANDEDNESS: SINGLE
 - (D) TOPOLOGY: LINEAR
- (ii) MOLECULE TYPE: Oligonucleotide
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CCAGGTCACC TTAAGGGAGT CTGGTCCTGC GCTGGTGAAA CCCACACAGA CCCTCACACT 60
GACCTGCACC 70

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 78 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

CAGCCCCAG GGAAGGCCCT GGAGTCGCTT GCAGACATTT GGTGGGATGA CAAAAAGGAC 60
TATAATCCAT CCCTGAAG 78

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 64 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GGTCCTTAAA GTGACCAACA TGGACCTGTC TGATACTGCC ACTTACTACT GTGCTCGGTC 60
TATG 64

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 72 NUCLEOTIDES
(B) TYPE: NUCLEIC ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: Oligonucleotide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GGCGTCGACT CACCATGGAC TGGACCTGGA GGGTCTTCTG CTTGCTGGCT GTAGCACCAG 60
GTGCCCACTC CC 72

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 7 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Thr Ser Gly Met Ser Val Gly

5

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 16 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Asp Ile Trp Trp Asp Asp Lys Lys Asp Tyr Asn Pro Ser Leu Lys Ser

5

10

15

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 10 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Met Ile Thr Asn Trp Tyr Phe Asp Val

5

10

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 10 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Lys Cys Gln Leu Ser Val Gly Tyr Met His

5

10

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS
(A) LENGTH: 6 AMINO ACIDS
(B) TYPE: AMINO ACID
(D) TOPOLOGY: LINEAR
(ii) MOLECULE TYPE: PROTEIN
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Thr Ser Lys Leu Ala Ser

5

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 8 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Phe Gln Gly Ser Gly Tyr Pro Phe

5

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 6 AMINO ACIDS

(B) TYPE: AMINO ACID

(D) TOPOLOGY: LINEAR

(ii) MOLECULE TYPE: PROTEIN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Ser Val Gly Tyr Met His

5